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ELM-TWIG GIRDLER (*Oncideres cingulatus*, Say).

Shade trees, prominent among them the elm, were liberally pruned this fall by this industrious wood-cutter. Its presence is made known by the numbers of small branches strewn beneath the trees. In these branches are to be found the eggs deposited singly at the base of the twigs beneath the bark. This insect was reported at work in Atchison, Dickinson, and Douglas counties.

A number of the adults were kept in the laboratory during their working season this fall, and careful study made there, as well as upon affected trees on the campus. Mr. P. E. Parrott, a student of this department, has given this subject special attention, and will report fully later on.

CHINCH-BUGS (*Blissus leucopterus*, Say).

The life-history and the destructive habits of this insect are too well known to require further description. The department has continued the dissemination of the infectious diseases. Repeated demands from some localities each year and highly satisfactory reports from a great majority of farmers using the remedy are gratifying to the department. While no further funds are at hand for the prosecution of the work, the department has decided to continue the work and render still effective service to the agriculturists, the only requirement being that all demands for infection be accompanied by postage for delivery of diseased bugs.

The above is a brief summary of the work of the most destructive insects during the past year. These lilliputians are enemies well worthy the attention of every agriculturist. While many points are familiar, there is much to learn in order to more successfully cope with them. The department will highly appreciate reports and coöperation of the Academy and others interested in making the desired knowledge more complete.

NOTES AND DESCRIPTIONS OF *MYDAIDÆ*.

By S. W. WILLISTON, Lawrence, Kan. Read (by title) before the Academy January 2, 1897.

Collections of Diptera, even large ones, rarely include many specimens or species of *Mydaidæ*. The extent of individual variation is, in consequence, not well known. I have had the opportunity of studying most of the known genera and nearly 30 species. Much of the literature is inaccessible to the general student. I trust, therefore, that the following tables of the North American species will be useful, notwithstanding that they have been in large measure compiled from the often incomplete descriptions:

LEPTOMYDAS.

I would call attention to the fact that the sexes differ very markedly in coloration in this genus, and I suspect that the species described by Osten Sacken from females may not in each case be distinct from those described by Loew from males.

1.—Black, legs for the most part black 2
Luteous or reddish, legs yellow or rufous 3
2.—Proboscis short, the labella not incrassate; first posterior cell closed; femora black, the knees reddish; wings blackish.. *tenuipes* Loew (male).
Base of hind femora and their tibiæ light yellow; wings cinereous hyaline; first posterior cell open .... *venosus* Loew (male).

3.—Proboscis long, the labella small; thorax brownish red with yellow stripes; abdomen with yellow bands; legs rufous, base of hind femora whitish; wings with a yellowish tinge .... *sponsor* O. S. (female).
Proboscis short 4

4.—Luteous, the abdomen black-fasciate, labella incrassate, legs yellow; wings brownish, first posterior cell open........ *pantherinus* Gerst. (female).
Thorax and abdomen red or brownish red; legs pale rufous; wings with a pale brownish tinge............... *brachyrrhynchus* O. S. (female).

Leptomydas brachyrrhynchus O. Sacken. A male specimen from Mexico, which I refer to the present species, is black throughout, the abdomen shining, with the cross-bands distinct. The legs are brown; the hind pair black, with the basal half of tibiæ and femora light yellow. The humeri are yellow. The wings are nearly hyaline. The species, it is seen, must be closely related to *L. tenuipes* Loew.

L. pantherinus Gerst. For the male of this species, compare Williston, Trans. Amer. Ent. Soc., XIII, 291.

MYDAS.

1.—Hind tibiæ without spur .... *parvulus* Westw.
Hind tibiæ with spur 2

2.—Posterior marginal cross-vein present 6
Posterior marginal cross-vein wanting.................................. 3

3.—Abdominal segments uniform in color .... *senilis* Westw.
Abdominal segments marginated 4

4.—Mesonotum ferruginous, with a broad black stripe in the middle, *basalis* Westw.
Mesonotum and antennæ black 5

5.—Hair of the face white (compare *M. gracilis* Macq.)... *annularis* Gerst.
Hair of the face black .... *subinterruptus* Bell.

6.—Abdomen black or blue throughout.................................... 16
Abdomen with yellow or red markings 7

7.—Abdomen black with one or more of the anterior segments red or yellow. 8
Abdomen otherwise marked 11

8.—Second segment only of the abdomen red.............................. 9
Second, third and fourth segments red.................................. 10

9.—Second segment red above, only....................... *clavatus* Drury.
Second segment red above and below .... *audax* O. Sacken.

10.—Face clothed with yellowish hair .... *fulvifrons* Illiger.
Face clothed with black hair .... *cleptes* O. Sacken.

11.—Abdomen red or brownish red, with black spots 12
Abdomen with some or all the segments margined with yellow 13

12.—Abdomen with a median spot on each segment.... *maculiventris* Gerst.
Abdomen usually with a black spot on each side of the segments; thorax vittate (*ventralis* Gerst.)......................... *militaris* Gerst.

13.—Second and third abdominal segments with a posterior yellow band,
interruptus Wied.
chrysostomus O. Sacken.
Posterior segments also marginated with yellow........................ 14

14.—Antennæ of the usual structure... 15
Lamella of antennæ longer than three preceding joints together, broadest at base (compare *M. gracilis* Macq.) .... *scitulus* Willist.

15.—Reddish, legs reddish..................... *pachygaster* Westw. (male).
Black, legs black .... *quadrilineatus* Will.

16.—Legs black.. 19
Legs more or less red or yellow.. 17
17.—Legs wholly yellow ....*fulvipes* Walsh.
Legs in part black.. 18
18.—Tibiæ and tarsi yellow ....*tibialis* Wied.
Hind femora largely or wholly red; thorax red..........*tricolor* Macq.
19.—Abdomen with more or less yellow hair or pile.......................... 20
Abdomen with black hair or pile only 21
20.—Abdominal segments, 2–5, with a broad band of short, appressed golden rufescent pile, not concealing the ground color when seen vertically, *chrysites* O. Sacken.
First two or three segments with yellow hair; alulæ conspicuously yellow...*dives* Westw.
21.—Wings nearly hyaline ....*crassipes* Westw.
Wings yellow or brown...........................*rubidapex* Wied.
lavatus Gerst.
xanthopterus Loew.
decor O. Sacken.
carbonifer O. Sacken.
bitœniatus Bell.
luteipennis Loew.
simplex Loew.

MYDAS *fulvifrons* Illiger. A single specimen, from Florida, in the University collection, agrees well with Illiger's description; less well with Wiedemann's, though I doubt not the species is the same.

MYDAS *decor* O. Sacken. Two specimens, from New Mexico (F. H. Snow) and Venta de Zapilote, Mexico.

MYDAS *basalis* Westwood. Numerous specimens from New Mexico (F. H. Snow). Westwood's description leaves no doubt of the identification of this well-marked species.

MYDAS *carbonifer* O. Sacken. A single specimen from Chapada, Brazil, I refer provisionally to this species. The specimen agrees with the description, save that the interior of the cells of the wings is distinctly lighter colored, and the claws are not reddish. There are some whitish hairs on the face.

MYDAS *rubidapex* Wiedemann; Brauer, Syst. Zool. Stud. pl. f. 2. Three specimens, from Mexico. One, a female, has the antennæ black, with the bulbous portion of the lamella yellow. This same specimen has the anal angle largely whitish. The others, male and female, have the first two joints of the antennae, only, black, and neither has any whitish color in the anal angle. In all the specimens the abdomen is deep black, without distinct violet or blue luster. A single specimen from Yucatan has the alulæ black, but the abdomen is deep violet. I discover no other differences.

MYDAS *dives* Westw. Five specimens, male and female, from Brazil, appear to belong to this species, especially characterized by the light yellow alulæ, which show very conspicuously in the folded wing. The wings are yellow, with the posterior part yellowish hyaline. The abdomen is brilliant blue, with yellow pile at the base. The specimens vary in length from 38 to 50 millimeters, but they are not nearly so robust as that of the species mentioned below.

MYDAS ——sp.? A large specimen from Mexico I at first thought might belong to a variety of *dives*, and I am not sure that it is distinct. The wings are ferruginous, as in *rubidapex*, but the alulæ and anal angles are yellowish white throughout, or the alulæ for the larger part. The abdomen is black, with scarce a trace of the bluish color, and there is no yellow pile at the base. Baron Osten Sacken identified a specimen from Mexico as *dives* differing chiefly from *rubidapex* in the color of the alulæ. In *rubidapex* the abdomen is black, or is so typically, while in *dives* Westwood described it as blue. A specimen from Yucatan, mentioned under *rubidapex*, holds an intermediate position between this and the two other species, if species they are.

MYDAS ——sp.? A single female specimen from Chapada, Brazil, I cannot locate. It is, I believe, the largest specimen of a dipteron ever recorded, measuring 50 millimeters in length with a spread of wings of over 100. I cannot identify the present species with *M. heros* Perty, inasmuch as there is no yellow pile on the abdomen and the abdomen is deep black, not blue. The wings are deep brown with the posterior part yellowish. The lamella of the antenna is red.

MYDAS *claripennis*, n. sp. Female. Black. Lamella of the antennæ moderately dilated toward the extremity. Front with black, the face with white hair. Mesonotum moderately shining, with seven densely white pollinose spots, situated one either side of the middle, in front, one on each side above the notopleural suture, a minute one in front of each post-alar callus, and a larger one in front of the middle of the scutellum. Pleuræ whitish pruinose; a tuft of white hair on the hind coxæ. Abdomen shining; first segment with loose white hair; second, third and fourth segments each with a broad band of light golden hair, closely appressed and combed outward, concealing the ground color. Hind femora moderately thickened; hind tibæ with a spur. Wings nearly hyaline, slightly brownish in the costal and subcostal cells and distally; posterior marginal vein present. Length, 20–25 mm.

One specimen, Chapada, Brazil (H. H. Smith). The banded abdomen and clear wings easily distinguish this species. It is nearest related to *M. chrysites* O. S.

MYDAS *militaris* Gerst.

Mydas vittatus Macq. (preoc.); ? *Mydas rufiventris* Macquart; ? *Mydas rufiventris* Loew; *Mydas ventralis* Gerst.

It is not at all improbable that the above synonymy will be found to be correct; if so, the species should bear the name *rufiventris* Macq. The species is very variable, as I have stated elsewhere. The hair of the face and front in my specimens is yellow.

MYDAS *quadrilineatus*, n. sp. Male. Black. The narrow frontal orbits and the sides of the face, extending to the root of the antennæ above, densely yellowish gray pollinose; pile of face, front and occiput everywhere white. Lamella of antennæ considerably expanded, equal to about two-thirds the length of the third joint. Mesonotum opaque, with two linear stripes, and the narrow lateral margins light grayish yellow pollinose; humeri whitish dusted. Pleuræ grayish pollinose, the pteropleuræ and coxæ with white hair. Abdomen shining black, the lateral margins of the anterior segments and their posterior margins laterally yellow. Legs black throughout, with white hair; pulvilli brown; hind tibiæ spurred. Wings brownish, darker in front and along the veins; posterior marginal cross-vein present. Length, 25 to 27 mm.

Three specimens, Mexico (H. H. Smith). The slender markings of the mesonotum may be easily obliterated. With these specimens there are three others from the same localities, that differ only in the presence of complete yellow abdominal bands, and in having the abdomen along the middle, both above and below, red. A female from San Blas is larger (30 mm.), and has the abdomen broader, with narrow, complete hind margins to the segments. If the thoracic stripes were present, they have been wholly obliterated.

Johnson has recently stated that *M. incisus* Macq. is the same as *M. pachygaster* Westw. If this be the case, the present species cannot be *M. incisus*, the very brief description of which might possibly apply, except for the thoracic stripes.

MYDAS *annulicornis* Westwood. Male and female specimens from Mexico agree fully with Westwood's description. The hair of the face in both sexes is black throughout. Gerstaecker believed that *annulicornis* is the same as *testaceus*, which has white hair on the sides of the face. The species are in all probability distinct.

MYDAS *cingulatus*, n. sp. Female. Differs from *M. notospilus* Wied. (or what I identify as *notospilus*) in the antennæ being longer, in the wings being dark brown anteriorly, and in the much darker legs. In *M. notospilus* the antennæ are distinctly shorter than the thorax, while in this they are fully as long. The lamella is not longer than the third joint and is less dilated. The face is more protuberant below, and, except the margin, is deep, shining black, with short, sparse, yellowish hairs on the lower part. The antennæ are deep black, save the expanded portion, which is deep red. The four anterior femora are pitchy black, the hind pair deep black. The hind femora are more dilated than in the following species. The wings are deep brown in front, the posterior part yellowish hyaline, the veins broadly brown. Length, 20 mm.

One specimen, "Shore of Rio Paraguay, below Concepcion, Dec. Forest, on ground." H. H. Smith.

MYDAS *notospilus* Wiedemann. A single female specimen, from Brazil, seems to belong to this species, though it shows differences from the description. The antennæ are in large part reddish, the middle of the face is yellowish, the abdomen is less dilated than is figured, the wings are only slightly clouded with brownish. The antennæ are shorter than in the preceding species, and the lamella is considerably dilated. The hind tibiæ are without spurs.

DOLICHOGASTER.

Dolichogaster *ioptera* Wiedemann (*brevicornis* Wied.) Three specimens, Brazil. They agree well with Wiedemann's description, but the generic characters given by Gerstaecker are faulty. In none of these specimens do the branches of the forked cell unite before joining the first vein. In one specimen there is a marginal cross-vein present.

ECTYPHUS.

Ectyphus *limbatus* Williston. This species was described from a female specimen, which seemed to show all the generic characters of *Ectyphus* Gerst.; that is, the presence of a circlet of spines at the tip of the abdomen and the absence of spurs on the hind tibiæ. A male specimen which I believe belongs with this species, notwithstanding the very marked difference of color, has a spur on the hind tibiæ and a prominent, free hypopygium. *E. pinguis* Gerst., the type of the genus, from Africa, has the hypopygium concealed. I can find no other generic distinction, however, and the erection of a new genus upon that one character would seem of doubtful propriety. The genus is nearest related to *Leptomydas*, which has the hypopygium in some species partly disengaged. Here is another character, if more be needed, proving the relationship to the Apioceridæ. Baron Osten Sacken, notwithstanding all the evidence that has been brought to controvert his views, stands yet quite alone in placing the Apioceridæ among the Asilidæ. Chætotactic characters are useful undoubtedly, but when one asserts that they outweigh all others, of whatever kind or degree, I cannot follow him.

Ectyphus *Townsendi*, n. sp. Female. Head black, clothed with white pile; the convex portion of the face, except its upper part, reddish yellow; orbits narrowly white pollinose, extending inwards on the upper part of the face. Antennæ black, the lamella reddish yellow; lamella about three-fifths the length of the slender third joint, elongate oval in outline. Thorax black, slightly pruinose; humeral and post-alar callosities reddish yellow; a spot on each side between the humeri and suture densely white, pollinose. Pleuræ with similar spots on the upper part of the sterno- and mesopleuræ. Abdomen deep, shining black; the posterior part of each segment, both above and below, rather broadly yellow; a small black spot on each side of the second segment in the yellow margin. The abdomen is rather broad, gently tapering, the last segment longer than the preceding one. Legs yellow throughout, slender, the hind femora not thickened (the distal part of the hind femora and the remainder of the hind legs are wanting in the single specimen). Wings yellowish hyaline. Length, 17 mm.

One specimen, Las Cruces, N. M. (Townsend). This species appears to be clearly congeneric with *E. limbatus* Willist., though the absence of the hind tibial spur cannot be affirmed. It differs from the above-cited species in the more elongate antennæ, the less cylindrical shape of the abdomen, and in the color. The male of *E. limbatus* is black, with the markings of the female, and it is probable that the male of this species will show a similar difference.

CERIOMYDAS, *gen. nov.*

Like *Mydas*, but the abdomen as in *Ceria* or *Conops*. The abdomen is pedunculate, much narrowed at the base, broadly expanded and acuminate distally; the first two segments are tapering, the third cylindrical, with parallel sides, and nearly twice as long as wide; the fifth segment is as broad as the thorax, whence the abdomen tapers to a point. The face is more produced downward than in *Mydas*, and the labella are larger. There is a marginal cross-vein in the wings, and the hind tibiæ are spurred.

CERIOMYDAS *fraudulentus*, n. sp. Female. Head black, the sides of the face below reddish. Front with soft white pile; face with two rows of soft, thick, reddish brown hair in the shape of a V, meeting at the oral margin. First three joints and the narrow portion of the lamella of the antennæ deep brown, reddish along the under side, expanded portion of the lamella deep red; lamella altogether about three-fourths the length of the third joint. Mesonotum black, but little shining; humeral and post-alar callosities, the scutellum, and the pleuræ for the most part, deep red. First three segments of the abdomen red, with a slender blackish hind margin; remainder black, but little shining. Legs red; the upper part of the front and the hind femora, and a stripe along the front part of the latter, black or deep brown. Wings with the front part and the base deep brown, elsewhere hyaline; the limitation between the brown and the hyaline parts on the outer portion of the wings is not diffuse, the line running from a little before the middle of the wing antero-posteriorly straight to the tip of the wing; the first and second basal cells are brown throughout, extending diffusely into the discal and posterior cells; the anal angle is less deep brown, and has a large hyaline space along its middle; the alulæ are largely hyaline. Length, 27 mm.

One specimen, Chapada, Brazil (H. H. Smith). This species shows a remarkable mimicry of certain ones of *Conops* occurring in the same region.